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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/925,020	08/09/2001	Fusasuke Gotoh	Q65831	2484

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EXAMINER

BURCH, MELODY M

ART UNIT	PAPER NUMBER
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3683

DATE MAILED: 09/09/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/925,020

Applicant(s)

GOTOH ET AL.

Examiner

Melody M. Burch

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 August 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 August 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 7.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the grease claimed in line 4 of claim 1 and the interference of the seal lip of the seal being 60% or more of an axial clearance (interpreting the axial clearance to be the distance from the vertical distance from element 2 to element 3 as shown in figure 9) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to because it is unclear to the Examiner whether or not the explanatory views such as that shown in figure 6 ^{are ~~mb~~} intended to be the prior art. If the figure is intended to prior art, a "Prior Art" label is required. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

3. Applicant is required to submit a proposed drawing correction in reply to this Office action. However, formal correction of the noted defect may be deferred until after the examiner has considered the proposed drawing correction. Failure to timely submit the proposed drawing correction will result in the abandonment of the application.

Specification

4. The disclosure is objected to because of the following informalities:

- On pg. 1 line 7 "rings 0" should be changed to --rings zero--.

Appropriate correction is required.

Claim Objections

5. Claim 1 is objected to because of the following informalities: in line 8 the phrase "when said clutch mechanism and shaft" should be changed to --when said clutch mechanism and said shaft--. Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-16 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Re: claim 1. The phrase "therein" in line 4 is indefinite. It is unclear to the Examiner as to the boundaries encompassed by Applicant's use of the term "therein" especially since the grease is not drawn in the figures.

Re: claim 1. The phrase "wherein an initial radial clearance between said inner

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and outer rings is set such that a bearing effective clearance" in lines 3-4 from the bottom is indefinite. It is unclear to the Examiner whether the bearing effective clearance is the same or different from the initial radial clearance. Examiner notes that radial clearance Rs is shown in figure 5(a).

Re: claims 3. Claim 3 recites the limitation "said rolling body" in lines 1-2 from the bottom. There is insufficient antecedent basis for this limitation in the claim.

Re: claim 4. Claim 4 recites the limitation "said rolling element" in lines 1-2 from the bottom. There is insufficient antecedent basis for this limitation in the claim.

Re: claims 5-8. Claims 5-8 recite the limitation "the seal lip" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Re: claims 9-16. Claims 9-16 recite the limitation "the base oil" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent JP2000-74052 (using US Patent Application Publication US 2002/0054720 to Obara as an English equivalent) in view of US Patent 5655844 to

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Takano and JP2000-119673 (using US Patent 6329326 to Iso et al. as an English equivalent).

Re: claim 1. Obara shows in figure 3 a rolling bearing structured such that a plurality of rolling elements 4 are respectively held between inner 7 and outer 2 rings by a retainer 20 as shown in figure 1, lubricant is sealed therein by a seal as disclosed in the last three lines of paragraph [0035], a rotary body 24 provided with the outer ring and a shaft 1 provided with the inner ring can be connected together by a clutch mechanism 27,29 as disclosed in the last two lines of paragraph [0074], when the rotary body and the shaft are connected together by the clutch mechanism, the rolling bearing can be used to receive rotation load while the relative rotation between the inner and outer rings is zero, but does not specifically disclose the limitation of the lubricant being grease and the limitation wherein an initial radial clearance between the inner and outer rings is set such that a bearing effective clearance when the rolling bearing is incorporated between the rotary body and the shaft can provide a positive value.

Iso et al. teach in line 1 of the abstract the use of grease used as a lubricant in a rolling bearing. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the lubricant of Obara to have included grease, as taught by Iso et al., in order to provide a well-known means of lubricating the rolling elements of the bearing to prevent premature wear between the rolling element-race/ring contacting surface.

Takano teaches in col. 2 lines 27-36 the use of an initial radial clearance between the inner and outer rings being set such that a bearing effective clearance

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when the rolling bearing is incorporated between the rotary body and the shaft can be provided a positive value. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the arrangement of the inner and outer rings of Obara, as modified, to have included a bearing effective clearance that can provide a positive value, as taught by Takano, in order to provide a means of improving the fatigue life of the contacting faces within the bearing.

Re: claim 9. Iso et al. teach in the abstract the use of a rolling bearing having a dynamic viscosity at 40 degrees Celsius of a base oil of a grease being $80 \text{ mm}^2/\text{s}$ or more. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the viscosity of the base oil of the grease of Obara, as modified, to have been $80 \text{ mm}^2/\text{s}$ or more, as taught by Iso et al., in order to provide improved torque properties at low temperatures.

10. Claims 2 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent JP2000-74052 (using US Patent Application Publication US 2002/0054720 to Obara as an English equivalent) in view of US Patent 5655844 to Takano and JP2000-119673 (using US Patent 6329326 to Iso et al. as an English equivalent) as applied to claim 1 above, and further in view of US Patent 4371220 to Brucher.

Re: claim 2. Brucher teaches in col. 4 lines 61-63 the use of a bearing effective clearance being set at 0.020mm or more. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the bearing effective clearance of Obara, as modified, to have been set at 0.020mm or more, as taught by

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Brucher, in order to provide a means of providing adequate space for ensuing ample lubrication of the bearing device.

Re: claim 10. Iso et al. teach in the abstract the use of a rolling bearing having a dynamic viscosity at 40 degrees Celsius of a base oil of a grease being 80 mm²/s or more. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the viscosity of the base oil of the grease of Obara, as modified, to have been 80 mm²/s or more, as taught by Iso et al., in order to provide improved torque properties at low temperatures.

11. Claims 3 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent JP2000-74052 (using US Patent Application Publication US 2002/0054720 to Obara as an English equivalent) in view of US Patent 5655844 to Takano and JP2000-119673 (using US Patent 6329326 to Iso et al. as an English equivalent) as applied to claim 1 above, and further in view of US Patent 4629337 to Teramachi.

Re: claim 3. Teramachi teaches in col. 4 lines 1-5 the use of depths of grooves formed in inner and outer rings 2,10 being respectively 17% or more of the diameter of rolling elements 4. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the depths of the grooves of the inner and outer rings of Obara, as modified, to have been 17% or more of the diameter of the rolling elements, as taught by Teramachi, in order to provide a means of increasing the amount of contact area between the grooves and the rolling elements to assist in maintaining the rolling elements within the confines of the grooves.

Re: claim 11. Iso et al. teach in the abstract the use of a rolling bearing having a dynamic viscosity at 40 degrees Celsius of a base oil of a grease being 80 mm²/s or more. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the viscosity of the base oil of the grease of Obara, as modified, to have been 80 mm²/s or more, as taught by Iso et al., in order to provide improved torque properties at low temperatures.

12. Claims 4 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent JP2000-74052 (using US Patent Application Publication US 2002/0054720 to Obara as an English equivalent) in view of US Patent 5655844 to Takano and JP2000-119673 (using US Patent 6329326 to Iso et al. as an English equivalent) and US Patent 4371220 to Brucher as applied to claim 2 above, and further in view of Teramachi.

Re: claim 4. Teramachi teaches in col. 4 lines 1-5 the use of depths of grooves formed in inner and outer rings 2,10 being respectively 17% or more of the diameter of rolling elements 4. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the depths of the grooves of the inner and outer rings of Obara, as modified, to have been 17% or more of the diameter of the rolling elements, as taught by Teramachi, in order to provide a means of increasing the amount of contact area between the grooves and the rolling elements to assist in maintaining the rolling elements within the confines of the grooves.

Re: claim 12. Iso et al. teach in the abstract the use of a rolling bearing having a dynamic viscosity at 40 degrees Celsius of a base oil of a grease being 80 mm²/s or

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more. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the viscosity of the base oil of the grease of Obara, as modified, to have been $80 \text{ mm}^2/\text{s}$ or more, as taught by Iso et al., in order to provide improved torque properties at low temperatures.

13. Claims 5 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent JP2000-74052 (using US Patent Application Publication US 2002/0054720 to Obara as an English equivalent) in view of US Patent 5655844 to Takano and JP2000-119673 (using US Patent 6329326 to Iso et al. as an English equivalent) as applied to claim 1 above, and further in view of US Patent 4650195 to Dreschmann et al.

Re: claim 5. Dreschmann et al. teach in figure 2 and in col. 2 lines 17-20 the use of an interference of a seal lip of a seal being 60% or more of an axial clearance. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the seal of Obara, as modified, to have included a seal having a seal lip being 60% or more of the axial clearance, as taught by Dreschmann et al., in order to provide a means of reducing the corrosion and, thus, improving the life of the bearing.

Re: claim 13. Iso et al. teach in the abstract the use of a rolling bearing having a dynamic viscosity at 40 degrees Celsius of a base oil of a grease being $80 \text{ mm}^2/\text{s}$ or more. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the viscosity of the base oil of the grease of

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Obara, as modified, to have been 80 mm²/s or more, as taught by Iso et al., in order to provide improved torque properties at low temperatures.

14. Claims 6 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent JP2000-74052 (using US Patent Application Publication US 2002/0054720 to Obara as an English equivalent) in view of US Patent 5655844 to Takano and JP2000-119673 (using US Patent 6329326 to Iso et al. as an English equivalent) and US Patent 4371220 to Brucher as applied to claim 2 above, and further in view of Dreschmann et al.

Re: claim 6. Dreschmann et al. teach in figure 2 and in col. 2 lines 17-20 the use of an interference of a seal lip of a seal being 60% or more of an axial clearance. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the seal of Obara, as modified, to have included a seal having a seal lip being 60% or more of the axial clearance, as taught by Dreschmann et al., in order to provide a means of reducing the corrosion and, thus, improving the life of the bearing.

Re: claim 14. Iso et al. teach in the abstract the use of a rolling bearing having a dynamic viscosity at 40 degrees Celsius of a base oil of a grease being 80 mm²/s or more. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the viscosity of the base oil of the grease of Obara, as modified, to have been 80 mm²/s or more, as taught by Iso et al., in order to provide improved torque properties at low temperatures.

15. Claims 7 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent JP2000-74052 (using US Patent Application Publication US 2002/0054720 to Obara as an English equivalent) in view of US Patent 5655844 to Takano and JP2000-119673 (using US Patent 6329326 to Iso et al. as an English equivalent) and Teramachi as applied to claim 3 above, and further in view of Dreschmann et al.

Re: claim 7. Dreschmann et al. teach in figure 2 and in col. 2 lines 17-20 the use of an interference of a seal lip of a seal being 60% or more of an axial clearance. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the seal of Obara, as modified, to have included a seal having a seal lip being 60% or more of the axial clearance, as taught by Dreschmann et al., in order to provide a means of reducing the corrosion and, thus, improving the life of the bearing.

Re: claim 15. Iso et al. teach in the abstract the use of a rolling bearing having a dynamic viscosity at 40 degrees Celsius of a base oil of a grease being 80 mm²/s or more. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the viscosity of the base oil of the grease of Obara, as modified, to have been 80 mm²/s or more, as taught by Iso et al., in order to provide improved torque properties at low temperatures.

16. Claims 8 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent JP2000-74052 (using US Patent Application Publication US 2002/0054720 to Obara as an English equivalent) in view of US Patent 5655844 to

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Takano and JP2000-119673 (using US Patent 6329326 to Iso et al. as an English equivalent) and US Patent 4371220 to Brucher and Teramachi as applied to claim 4 above, and further in view of Dreschmann et al.

Re: claim 8. Dreschmann et al. teach in figure 2 and in col. 2 lines 17-20 the use of an interference of a seal lip of a seal being 60% or more of an axial clearance. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the seal of Obara, as modified, to have included a seal having a seal lip being 60% or more of the axial clearance, as taught by Dreschmann et al., in order to provide a means of reducing the corrosion and, thus, improving the life of the bearing.

Re: claim 16. Iso et al. teach in the abstract the use of a rolling bearing having a dynamic viscosity at 40 degrees Celsius of a base oil of a grease being 80 mm²/s or more. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the viscosity of the base oil of the grease of Obara, as modified, to have been 80 mm²/s or more, as taught by Iso et al., in order to provide improved torque properties at low temperatures.

Conclusion

17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Patents: 5531525 to Hida et al., 4856916 to Ito et al., and 4191432 to Miki et al. teach the use of seal lips with respect to an axial clearance, 3969005 to Traut and 5110222 to Johnson et al. teach the use of positive clearances,

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4050845 to Gemein et al. teach the use of a figure 2 similar to figures 3 of the instant application, 5967671 to Obara, 5667045 to Cummings, III, 6244408 to Tobayama et al., 5818133 to Kershaw et al., and JP-11238298 teach the use of rolling bearing devices having a shaft, a rotary body, inner and outer rings, rolling elements, coupling of the shaft and rotary body and a clutch mechanism.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melody M. Burch whose telephone number is 703-306-4618. The examiner can normally be reached on Monday-Friday (7:30 AM-4:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Lavinder can be reached on 703-308-3421. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-7687 for regular communications and 703-305-7687 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1113.

mmb 8/30/02
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August 30, 2002


JACK LAVINDER
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9/4/02